

THE DEVELOPMENT OF OUR KNOWLEDGE OF THE MARSUPIALS OF WESTERN AUSTRALIA

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In my address this evening I propose to deal with the development of our knowledge of the Marsupials of Western Australia from the distant days of the seventeenth century, when the Dutch navigators first landed on these shores, up to the present day.

As far as can be learnt from records available to us the Dutch under Pelsart were the first Europeans to study a marsupial at close quarters. During their enforced stay on the Abrolhos after the wreck of the "Batavia" in 1629, they not only used the local Tammar¹ as food but came to the conclusion that the young form and develop on the nipple, a fallacy which is dying hard, as even today there are bushmen in the out back who are still of the same opinion. Who can blame them when in the nineteenth century several learned ships doctors supported these views though it had been shown earlier by anatomists in London that such was not the case.

In 1658, Volckersen in his account of the voyage of the "Waeckende Boey" refers to Rottnest, which he did not name, stating they saw there "a wild cat resembling a civet-cat, but with browner hair,"² undoubtedly the Quokka which fortunately still occurs on the island. It was de Vlamingh, a visitor to the island in 1696, who mistaking the Quokka for "a kind of rat as big as a common cat," gave the island the name it still bears today.

Three years later Dampier landed on Dirk Hartog Island where he saw "a sort of Raccoon different from those of the West Indies chiefly as to their legs; for these have very short Fore-Legs, but go jumping upon them as the others do (and like them are very good meat)."³ A little later when landing in Dampierland in search of water the men saw "a Rackoon or two"⁴ probably the Yalva which was formerly plentiful among the sandhills near the shore.

In 1791, Vancouver saw a dead kangaroo at King George III. Sound and the following year the French zoologist Riche, a member of d'Entrecasteaux expedition in the "Recherche" and the "Esperance," when lost in the Esperance Bay district "encountered three kangaroos of the large species (*Didelphis gigantea*, Zimm.)⁵.

At the beginning of the nineteenth century a French expedition visited these shores in the "Geographe" and the "Naturaliste."

¹ *Macropus (Thylogale) eugenii houtmanni* (Gould).

² *Macropus (Setonix) brachyurus* (Quoy and Gaimard).

³ *Lagostrophus fasciatus* (Peron and Lesueur).

⁴ *Bettongia lesueur lesueur* Quoy and Gaimard.

⁵ *Macropus ocydromus* Gould.

The "Voyage de Decouverte aux Terres Australes" contains a detailed account of the animal met with in such numbers on Bernier Island⁶ an English translation of this by W. B. Alexander is given in Volume 1 of the Journal of this Society.

During the voyage the island of Rottneest was also explored. Reference is made to this in the first volume where it is stated that two marsupials were found to be present⁷. This statement has led to a considerable amount of discussion, for when the English settlers occupied the island less than 30 years later only one species of the Quokka was found to be present. I have suggested⁸ that the dimensions given (65 centimetres de hauteur) indicate an animal considerably larger than the Quokka but approximating the Tammar⁹ which still exist on Garden Island where members of the expedition also went ashore.

Captain Mathew Flinders, who was surveying the coast, was at King George's Sound in January, 1802, where the kangaroo appeared to be numerous and of more than one species . . . "three of them seen by me bore a resemblance to the large kind which inhabits the forests of Port Jackson."¹⁰ On Mondrain Island in the Recherche Archipelago they captured a few small kangaroos of a species different from any he had seen.¹¹

In 1819, Captain P. P. King was off our northern shores where he reports that Kangaroos were seen in several places with Kangaroo Rats at Cambridge Gulf and Admiralty Gulfs. On his third visit in 1820 his botanist saw four individuals of a small species of kangaroo amongst the spinifex on the cliffs.¹² Near the water holes one of the crew saw a fifth Kangaroo of a grey colour and of a larger size than usual.¹³ Small opossums were twice noted¹⁴ the second "appeared to be the same animal that the colonists at Port Jackson call the Native Cat."¹⁵

The next year, King again visited the northern coast, this time in the "Bathurst," when the party ashore at Brunswick Bay saw many Kangaroo Rats and small Kangaroos¹² skipping about the rocks.

From January 20th to 26th the vessel was anchored at Dirk Hartog Island for minor repairs. Here Cunningham saw a small black Kangaroo which may have been the Banded Wallaby, *Lagostrophus fasciatus* so fully described by Peron.

The "Astrolabe" under Dumont D'Urville spent a fortnight at King George's Sound where Quoy and Gaimard found a dead wallaby¹⁶ and captured several young bandicoots.¹⁷

⁶ *Lagostrophus fasciatus* (Peron and Lesueur).

⁷ First Edition, 1807, pp. 188/9, Second Edition, 1824, pp. 368/9.

⁸ *West Aust. Nat.*, Vol. I, No. 1, 1947, p. 22.

⁹ *Macropus (Thylogale) eugenii derbianus* (Gray).

¹⁰ *Macropus ocydromus* Gould, the Western Grey Kangaroo.

¹¹ Probably Hackett's Rock Wallaby. *Petrogale hacketti* Thomas.

¹² ? *Petrogale brachyotis brachyotis* Gould, or *Peradorcas concinna monastria* Thomas.

¹³ ? Woodward's Kangaroo *Macropus robustus woodwardi* Thomas.

¹⁴ *Trichosurus vulpecula arnhemensis* Collet.

¹⁵ *Dasyurus (Satanellus) hallucatus exilis* Thomas.

¹⁶ The type specimen of the Quokka, *Macropus (Setonix) brachyurus* (Quoy and Gaimard).

¹⁷ *Isodon obesulus fusciventer* (Gray) the type locality of which is King George's Sound.

Scott Nind who was the medical officer in the Penal Settlement at King George's Sound until October, 1829, mentions the following animals:—

The Grey Kangaroo, *Macropus ocydromus* Gould.

The Brush Kangaroo, *Macropus (Wallabia) irma* (Jourdan).

The Nailoit, *Potorous gilbertii* (Gould).

The Wahl, *Bettongia pencillata* (Waterhouse).

The Tammar, *Macropus (Thylogale) eugenii* (Desmarest).

The Quakur, *Macropus (Setonix) brachyurus* (Quoy and Gaimard).

The Comal, *Trichosurus vulpecula hypoleucus* (Wagner).

The Nworra, *Pseudocheirus occidentalis* Thomas.

With the foundation of the colony, the establishment of a seat of government on the Swan River, and the arrival of settlers who started to open up the country and showed an interest in the fauna and flora of their new homeland our knowledge grows apace. In 1830, Dale and Harvey penetrated 100 miles inland where they saw many kangaroos, chiefly of . . . "the larger kind which are properly called the Forest Kangaroo¹⁸ and on October 17th killed a smaller one of another kind called the Mountain Kangaroo."¹⁹

The next year, Dale and another party including G. Fletcher Moore saw their first Numbat²⁰ south of Beverley on September 21st, actually capturing a specimen the following day. The animal was described and exhibited by G. R. Waterhouse at a meeting of the Zoological Society of London on July 12th, 1836. A second was placed before the Society on December 13th when James Reid introduced the first Dalgite²¹ "an animal found beyond the mountains of Swan River in the district of York. They feed upon large maggots and the roots of trees and do considerable damage to the maize and potato crops by burrowing."

In December, 1837, George Grey and his party landed in Hanover Bay, remaining in the district until April exploring as much of the country as its ruggedness and the hostility of the natives would permit. Grey was an enthusiastic naturalist whose journals are full of observations dealing with the fauna and the aborigines of the colony. In the North he observed four species of kangaroo, "the large *Macropus giganteus*²², two smaller kinds²³ one of which is the *Petrogale brachyotis* of Gould and a Kangaroo Rat²⁴, one species of opossum²⁵, a flying squirrel²⁶, two kinds of dogs . . ."

¹⁸ *Macropus ocydromus* Gould.

¹⁹ *Petrogale lateralis* Gould.

²⁰ *Myrmecobius fasciatus* Waterhouse.

²¹ *Macrotis lagotis* Reid.

²² *Macropus (Osphranter) robustus woodwardi* Thomas.

²³ *Onychogalea unguifera* (Gould) *vide* Gray in Grey, p. 402.

²⁴ *Bettongia lesueur lesueur* (Quoy and Gaimard), this species was common at Roebuck Bay and as Grey was familiar with the animal at "Swan River" we may regard his identification as correct.

²⁵ *Trichosurus vulpecula arnhemensis* Collet.

²⁶ *Petaurus breviceps* Waterhouse.

In the appendix, Gray gives a list of the marsupials known from Western Australia in which the following are given as occurring at Swan River :—

<i>Phascogale murina</i>	....	<i>Sminthopsis murina</i>	Waterhouse
* <i>Ph. leucogaster</i>	....	<i>Phascogale (Antechinus) flavipes leucogaster</i>	(Gray)
* <i>Myrmecobius fasciatus</i>			Waterhouse
* <i>Perameles fusciventer</i>	....	<i>Isoodon obesulus fusciventer</i>	(Gray)
* <i>P. lagotis</i>	....	<i>Macrotis lagotis</i>	Reid
<i>Phalangista vulpina</i>	....	<i>Trichosurus vulpecula hypoleucus</i>	Wagner
<i>Hepoona cookii</i>	....	<i>Pseudocheirus occidentalis</i>	Thomas
* <i>Macropus lunatus</i>	....	<i>Onychogalea lunata</i>	(Gould)
* <i>Halmaturus manicatus</i>	....	<i>Macropus (Wallabia) irma</i>	(Jourdan)
* <i>H. brachyurus</i>	....	<i>Macropus (Setonix) brachyurus</i>	(Quoy & Gaimard)
<i>H. Derbianus obscurior</i>	....	<i>Macropus (Thylogale) eugenii derbianus</i>	(Gray)
* <i>Petrogale lateralis</i>			Gould
* <i>Hypsiprymnus gilbertii</i>	....	<i>Potorous gilbertii</i>	(Gould)
* <i>Bettongia ogilbii</i>	....	<i>Bettongia pencillata ogilbyi</i>	(Waterhouse)

of which those marked "*" were considered to be "peculiar to the Western Australian district."

To this list we must add *Bettongia graii* said to have come from South Australia (Port Lincoln) but which we know, from G. R. Waterhouse's "Marsupialia," a volume in Jardine's Natural History, was at that time represented only by Gould's type and a young skin, both collected near Northam.²⁷

This work by Waterhouse though undated was published in August, 1841, before Grey's journals were made available to the public. The introduction to the volume contains, on page 66, interesting notes by Dr. Collie on a foetal Kangaroo, probably from Garden Island.

"Mr. Collie describes a young of a species of Kangaroo (probably that described in this work as *derbianus*), which he saw at Garden Island or Buache, W.A., as being "nearly the size of the middle joint of one's little finger, its integuments of a flesh colour, and so transparent as to permit the higher coloured vessels and viscera to shine through them." This little foetus Mr. Collie detached from the nipple, and shortly afterwards placed the extremity of the teat close to its mouth, and having held it there for a short time without perceiving any decided effort on the part of the young animal to regain its hold allowed the pouch to close. An hour afterwards the young was observed still unattached, but in two hours it had hold of the teat and was actively employed sucking it."

On page 185 he describes *Hypsiprymnus ogilbyi* (Gould *ms.*) from Swan River (York), the western form of *Bettongia pencillata* and among animals from Western Australia includes *P. bougainvillii*, overlooked by Gray whose *Bettongia lesueur harveyi* was not described until the following year. He also transfers *H. Graii* (type locality Northam) from South Australia.

²⁷ *loc. cit.*, p. 191.

In February, 1837, H.M. Sloop "Beagle" was commissioned to undertake a survey of the N.W. coast of Australia at first under Commander Wickham and later, March, 1841, under Captain J. Lort Stokes who completed the task and published in 1846 an interesting and extensive account of the six years' work. On the 15th November the vessel made Rottneest Island and soon after anchored at Fremantle. Owing to the Captain's illness the vessel remained at the Swan River, the time being spent surveying the dangers which surround Rottneest Island "as well as those which lie between its shores and the coast"; this survey of great importance to the interests of shipping in these waters was completed on subsequent visits. On 4th January, the vessel left for the north, at the end of the month they landed in northern Dampierland where, near Point Swan, they shot a nail-tailed Kangaroo²⁸ and "saw some very large red or cinnamon-coloured Kangaroos but never got near enough to secure one."²⁹

When exploring the eastern shore of King Sound, Stokes met a number of "Rock Kangaroos" "bounding with defiance of pursuit." The same species was again seen at Port Osborne several days later and at Collier Bay on 12th April.³⁰

During April and May, 1840, the "Beagle" was engaged in surveying the Abrolhos when the names East and West Wallabi were given to the islands on which the animals occur. Stokes remarks "the reader will obtain a good idea of the numbers in which these animals were found when I state that on one day within four hours I shot 36, and that between three guns we killed 76 The species has been described, from a specimen we obtained, as *Halmaturus Houtmanni*, it is distinct from *Halmaturus Derbianus*³¹, found on most of the islands on the southern parts of the Continent."

This material together with some from the north, resulted in an extensive account of the method of reproduction among the Macropods by the ship's surgeon Benjamin Bynoe.³²

The "Beagle" then proceeded north where on Depuch Island Stokes knocked over a small Kangaroo on the summit of the island. He describes it fully adding that "Mr. Gould has figured an animal very like this I have described as *Petrogale lateralis* from a specimen he sometime afterwards got from Western Australia, but he has not noticed the beautiful Kangaroo from Depuch Island."

Later Barrow Island was visited and there they discovered a new kind of Kangaroo and Wallaby, the former was characterised as *Osphranter* (?) *isabellinus*³³ and the latter also new to science, received the name of *Lagorchestes conspicillatus* because of the pale ring around the eyes. Similar animals were found later on Tremouille and Hermite in the Montebello group. Stokes remarks that the description was based upon a specimen from Tremouille Island, but Gould gives Barrow Island as the type locality³⁴.

²⁸ *Onychogalea unguifera* Gould.

²⁹ Most probably *Macropus (Osphranter) robustus woodwardi* (Thomas).

³⁰ *Petrogale brachyotis* Gould.

³¹ *Macropus eugenii derbianus* Gray.

³² Stokes' "Discoveries in Australia," Vol. 2, p. 156 *et seq.*

³³ *Osphranter isabellinus* Gould., *Proc. Zool. Soc., Lond.*, 1841, p. 81.

³⁴ *Proc. Zool. Soc., Lond.*, 1841, p. 82 (1842). This is confirmed by Gray in his list of 1843 and by Oldfield Thomas in the B.M. Catalogue of Marsupials (1888), p. 81. Specimen 41, 10, 12, 7.

In the meantime professional collectors had not been idle for towards the end of 1838 Dr. Ludwig Preiss, a German who had been financed by the Russian and Prussian governments, began to gather botanical and zoological material. He was an assiduous collector as is shown by a letter he wrote to the Governor on October 11th, 1839, offering his collections for a sum of money and a grant of land.

His material included about 15,000 insects, 150 species of shells, about 600 birds, 32 species of reptiles, 8 of frogs, 23 of fish and no less than 24 species of mammals each species represented by several specimens, among them the following marsupials:—

<i>Dasyurus maugei</i> Geof.	....	<i>Dasyurinus geoffroii fortis</i> Thomos
<i>Perameles nasuta</i> Geof.	....	<i>Isoodon obesulus fusciventer</i> (Gray)
<i>Phalangista cookii</i> Cuv.	....	<i>Pseudocheirus occidentalis</i> Thomas
<i>Phalangista</i> sp. n.	....	?
<i>Petaurus</i> two species	....	?
<i>Macropus minor</i> Shaw	....	<i>Potorous platyops</i> (Gould)
<i>Macropus giganteus</i> Shaw	....	<i>Macropus ocydromus</i> Gould
<i>Macropus elegans</i>	....	<i>Macropus (Wallabia) irma</i> Jourdan
<i>Macropus rufogriseus</i> Less	....	?
<i>Macropus thetidis</i> Less	....	<i>Macropus (Thylogale) eugenii</i> Desm.
Numbat	....	<i>Myrmecobius fasciatus</i> Waterhouse.
Dalgeit	....	<i>Macrotis lagotis</i> Reid.

At the same time he must have had ample funds as we learn from Gilbert that he was offering higher prices for specimens than Gilbert was prepared to pay. It is therefore not surprising that before his departure for London on January 8th, 1842, he should have amassed 200,000 plants, 200 species of insects, 181 species of birds and from 60 to 80 species of reptiles in addition to mammals and fishes, the number of which is not given in the information kindly supplied by Major H. M. Whittell. It is most unfortunate that the collections were dispersed commercially before reports upon the material were published. We know, however, that he obtained the types, a male and a female, of our Grey Kangaroo, *Macropus ocydromus* Gould, somewhere in Swan River³⁵, the co-types of *Lagorchestes-(Lagostrophus) albipilis* Gould, at Wongan Hills and York³⁶ and perhaps the type of *Phascogale apicalis* Gray, which had been purchased by the British Museum from J. G. W. Brandt of Hamburg in 1842.

Preiss worked principally in the country around Perth but he visited "the islands" and went inland to the Victoria District, the Wongan Hills, York, and along the track south from that centre to King George's Sound. The country around Albany was explored as far east as Mt. Manypeak and Cape Riche, and inland to the Gordon and Mt. Barker. He traversed the Albany road direct from Perth and was familiar with the coastal plain as is indicated by material obtained at Serpentine, the Murray, Port Leschenault, the Preston and the Vasse.

³⁵ Oldfield Thomas, *op. cit.*, 1888, p. 18.

³⁶ Oldfield Thomas, *op. cit.*, 1888, p. 102.

In a letter to Hooker published in the Journal of Botany, Vol. 2, 1840, James Drummond, the Colonial Botanist, describes a visit to Guangan³⁷ and the Salt River. He remarks that Kangaroos³⁸ were seen in hundreds on these sandy plains, adding that there were nine species at Swan River. "The animal called the Dolgitch³⁹ burrows in the ground, the Burdit⁴⁰ burrows in the ground or lives in holes in the rocks and the Manang⁴¹, a small kind of Kangaroo, has a horny substance like a claw on the point of its tail."

John Gilbert who accompanied Drummond on some of his trips spent many months in this Colony collecting mammals, birds, reptiles and insects for John Gould. By a piece of good fortune Mr. A. H. Chisholm on a recent visit to England⁴² was able to secure letters and other documents connected with these worthies, among which were lists of specimens forwarded to London by Gilbert.

Copies of these have been kindly supplied to me by Major H. M. Whittell. By the "Shepherd" which left here on January 1st, 1840, were sent the following Marsupials:—

2 Dalgytes	....	....	....	<i>Macrotis lagotis</i> Reid.
2 Native Cats	....	....	....	<i>Dasyurus geoffroii fortis</i> (Thomas)
1 Opossum	....	....	....	<i>Trichosurus vulpecula</i> (Kerr)
2 Nombats	....	....	....	<i>Myrmecobius fasciatus</i> Waterhouse
1 Kangaroo Rat	....	....	....	<i>Bettongia pencillata ogilbyi</i> (Waterhouse)
1 large-eared Kangaroo Rat	....	....	....	? <i>Choeropus ecaudatus occidentalis</i> (Gould)
1 Rock Kangaroo	....	....	....	<i>Petrogale lateralis</i> Gould
1 Burrowing Kangaroo Rat	....	....	....	<i>Bettongia lesueur graii</i> (Gould)
1 Wallaby	....	....	....	?

In December, 1843, the "Napoleon" left with a much richer cargo, including the following marsupials:—

4 <i>Macropus ocydromus</i>				
3 <i>Halmaturus manicatus</i>	....	....	....	<i>Macropus</i> (<i>Wallabia</i>) <i>irma</i> (Jourdan)
11 <i>Myrmecobius fasciatus</i>				
12 <i>Halmaturus Binoe</i>	....	....	....	<i>Macropus</i> (<i>Thylogale</i>) <i>eugenii houtmanni</i> (Gould)
2 <i>Bettongia ogilbyi</i>	....	....	....	<i>Bettongia pencillata ogilbyi</i> (Waterhouse)
12 <i>Halmaturus</i> (Damas)	....	....	....	<i>Macropus</i> (<i>Thylogale</i>) <i>eugenii derbianus</i> (Gray)
4 <i>Dasyurus viverrinus</i>	....	....	....	<i>Dasyurus geoffroii fortis</i> (Thomas)
4 <i>Hypsiprymnus Gilbertii</i>	....	....	....	<i>Potorous gilbertii</i> (Gould)
2 <i>Halmaturus</i>	....	....	....	?
4 <i>Macropus</i> (nail-tailed)	....	....	....	<i>Onychogalea lunata</i> (Gould)
1 <i>Phalangista vulpina</i>	....	....	....	<i>Trichosurus vulpecula hypoleucus</i> (Wagner)
4 <i>Perameles</i> (Mala)	....	....	....	<i>Perameles myosura</i> (Wagner)

³⁷ ? Wongan Hills District, where Gilbert later obtained his first Gnow. *Leipoa ocellata* Gould.

³⁸ *Macropus ocydromus* Gould.

³⁹ *Macrotis lagotis* Reid.

⁴⁰ *Bettongia lesueur graii* (Gould.).

⁴¹ *Onychogalea lunata* (Gould.).

⁴² Chisholm, *The Emu*, Vol. XXXIX, 1940, Whittell, *The Emu*, Vol. XII., 1941.

2	<i>Phascogale</i> ?		
16	<i>Phascogale</i> ?		
6	<i>Phascogale</i> ?		
4	<i>Tarsipes spencerae</i>	....	<i>Tarsipes spencerae</i> (Gray)
7	<i>Perameles fusciventer</i>	....	<i>Isoodon obesulus fusciventer</i> (Gray)
13	<i>Petrogale lateralis</i> Gould, 1842		
19	<i>Bettongia Grayii</i>	....	<i>Bettongia lesueur grayii</i> (Gould)
6	<i>Lagorchestes albipilis</i>	....	<i>Lagostrophus fasciatus albipilis</i> (Gould)
1	<i>Hypsiprymnus</i>		
8	<i>Perameles lagotis</i>	....	<i>Macrotis lagotis</i> Reid
3	<i>Lagorchestes</i> ? (Woorup)....		<i>Lagorchestes hirsutus hirsutus</i> (Gould)
4	<i>Hepoona Cookii</i>	....	<i>Pseudocheirus occidentalis</i> (Thomas)
3	<i>Phascogale pencillata</i>	....	<i>Phascogale tapoatafa</i> (Meyer)
23	<i>Phascogale</i> ?		
1	<i>Phascogale</i> ?		
2	<i>Chasopus (sic)</i>	....	<i>Chaeropus ecaudatus occidentalis</i> (Gould)
3	<i>Dromicius gliriformis</i>	....	<i>Cercartetus concinnus</i> (Gould)
1	<i>Phascogale</i> ?		

The number of scientific names used by Gilbert in this second list are an indication of the advances made during the four years between the two consignments. Gilbert visited the Abrolhos, the islands off Fremantle, the South West from New Norcia (Moore's River) southwards and inland to the Gordon Plains and Wongan Hills district.

On some of these expeditions he was accompanied by Johnson Drummond, son of the Colonial Botanist, who collected mammals and birds for Gould and in return received copies of Gould's Monographs of the Macropodidae⁴³ and the Birds of Australia. These are now in the possession of a relative, Mrs. J. M. Drummond of Peppermint Grove.

Gilbert collected the types of a number of W.A. mammals, descriptions of which mostly appeared in the Annals and Magazine of Natural History and the Proceedings of the Zoological Society of London.

They include:—

<i>Antechinus flavipes leucogaster</i> (Gray)	....	Canning River.
<i>Phascogale calura</i> Gould	....	Williams River
<i>Sminthopsis c. crassicaudata</i> (Gould)	....	Williams River.
<i>Isoodon obesulus fusciventer</i> (Gray)	....	King George's Sound.
<i>Sminthopsis murina fuliginosa</i> (Gould)	....	River Avon.
<i>Chaeropus ecaudatus occidentalis</i> Gould	....	Boorda, Kirltana W.A. ⁴⁴ .
<i>Cercartetus concinnus</i> (Gould)	....	Swan River.
<i>Pseudocheirus occidentalis</i> Thomas	....	King George's Sound.
<i>Bettongia pencillata ogilbyi</i> (Gould m.s.)		York.
(Waterhouse)		
<i>Potorous gilbertii</i> (Gould)	....	King George's Sound.
<i>Potorous platyops</i> (Gould)	....	Walyema Swamp, 40 miles N.E. of Northam
<i>Lagorchestes hirsutus hirsutus</i> (Gould)	....	York District.
<i>Onychogalea lunata</i> (Gould)	....	Swan River.
<i>Petrogale lateralis</i> Gould	....	Swan River.

which provide a lasting tribute to John Gilbert's energy and ability as a collector.

⁴³ This work, which was not completed, contained descriptions of figures of two Western Australian species, *Hypsiprymnus Gilbertii* from King George's Sound in Part 1 (1841), and *Petrogale lateralis* from Swan River in Part 2 (1842): both the types were collected by Gilbert.

⁴⁴ Thomas, O., *Brit. Mus. Cat.*: Mars and Monotr.: (1888), p. 252.

Gilbert paid two visits to Western Australia, the first extending from March, 1839 to February, 1840, and the second from July, 1842 to December, 1843.

The year 1846, saw the completion of the "The Natural History of the Mammalia, Vol. 1, Marsupialia or Pouched Animals," by G. R. Waterhouse, which had appeared in monthly parts. The author carefully examined all the material available, he added one species to the list⁴⁸, which increased the number of Western Australian forms to 36. On the other hand *Macropus melanops*, and *M. ocydromus* are regarded as synonyms of *M. giganteus*, Gould's *Macropus (Lagorchestes) albipilis* from Moore River is united with Peron and Lesueur's *fasciatus* from Sharks Bay and the *Halmaturus binoe* of Gould from Port Essington reduced to a synonym because it "so perfectly resembles his *Halmaturus agilis* in all respects excepting size, that I cannot regard it as a distinct species in size this animal nearly agrees with the *Halmaturus derbianus*."

Gould later admitted that he had been mistaken and agreed with Waterhouse that the specimen was a young *Halmaturus agilis*.⁴⁹

Waterhouse correctly relegated *Macropus (Halmaturus) manicatus* of Gould to the synonymy of Jourdan's *M. (H.) irma*. Gray's *H. brevicaudatus* to that of Quoy and Gaimard's *M. (H.) brachyurus*⁵⁰, but he erred in connection with *Tarsipes rostratus* which has not priority over Gray's *Tarsipes spenserae* published three months earlier although some three months after the specimen described by Gervais and Verreaux had been exhibited at a meeting of the Zoological Society of London.

The Tammars presented a difficulty which was solved by regarding Gould's *Halmaturus dama* and *H. gracilis* from the western mainland as synonyms of Desmarest's *Kangurus eugenii* from the Nuyts Archipelago of South Australia, whilst *Halmaturus derbianus* based on a specimen in Lord Derby's menagerie later presented to the Zoological Society, was considered to be a distinct species "strictly confined to the islands off the west coast" though Gould had stated that this occurred on Kangaroo Island and had been informed that it "inhabited Rottneest and Garden Island." Geographically this seems unsatisfactory as several later workers have realised, each supplying his own solution.

The Western Ringtail is regarded by Waterhouse as identical with the eastern *Phalangista (Pseudocheirus) cookii* although he remarks that the Swan River specimens are very dark.

We have seen that in December, 1843, Gilbert forwarded to Gould two specimens of "*Chasopus*" undoubtedly the *Chaeropus* on which Gould based his *Chaeropus occidentalis*. Two *Chaeropus* were in the collection of the British Museum when Waterhouse wrote, one from South Australia presented by George Gray and the second "from the Swan River district, where, according to Mr. Gould, the species is confined to the interior of the country." Waterhouse does not compare the specimens nor does he mention Gould's name *occidentalis*, given to the Swan River specimen in the previous year.

⁴⁵ Mammals of Australia, Vol. 22, text to plates 24 and 25.

⁴⁶ Catalogue of Marsupialia and Monotremata, p. 44 (1888).

⁴⁷ A check list of the Mammals recorded from Australia (1834), *Aust. Mus. Mem.*, VI.

⁴⁸ *Phalangista (Dromicia) neillii*, from King George's Sound. Actually a miniature male *Cercartetus cinnus* (Gould.)

⁴⁹ *Wallabia agilis* (Gould.)

⁵⁰ *Setonix brachyurus* (Quoy and Gaimard).

At the end of the Volume are lists showing the distribution of the Marsupialia in Australia.

The section "North Australia" contains several forms first collected within the boundaries of this state. From the lists of Western Australian species "*Macropus eugenii*" is omitted although earlier in the text *M. dama* and *M. gracilis* both with type locality in Western Australia, are relegated to its synonymy. There is also no mention of *Dasyurus geoffroii* and *Chaeropus ecaudatus*, which we have seen were included in the second list of specimens sent to Gould by Gilbert in 1843. On the other hand the list is increased by including both *Macropus giganteus* and *Macropus giganteus ocydromus* together with *Phalangista vulpina* and *Phalangista vulpina xanthopus* Ogilby in spite of the fact that on page 295 it is stated that the exact part of the Continent inhabited by this form is unknown. *Phalangista neillii* of course appears in the list as independent of the older *Phalangista concinna*.

From June to September, 1854, Assistant Surveyor R. Austin conducted investigations into the nature of the country around Lake Cowcowing and northwards to Lake Austin, from which point he turned in a westerly direction endeavouring to reach the mouth of the Gascoyne River but was forced by drought conditions to return to the Murchison River and make for the Geraldine Mine. In his report the surveyor noted many of the animals seen, some of which were reported on by W. A. Sanford in an appendix to the Report, the most noteworthy discovery being the presence of the Red Kangaroo on the Murchison.

The Grey Kangaroo, called the common Kangaroo, was met with at Goomalling, Koombarkine Lake, Ejanding, and in the Cowcowing district. The Red Kangaroo occurred in varying numbers around Mt. Magnet, west of Mt. Farmer and in the country of the Murchison River Valley. Of the first specimen shot, Austin writes "These animals are not all of them red; some are of a blue or slate colour with white throats and breasts, and tan marks on each side of the face. I have seen them both, bucks and does, varying thus in colour, herding and feeding together."

This description is of interest as the general impression current today is that only the does show the blue colouration and in my experience of Murchison animals which I have shot and examined in 1922, this certainly seemed to be the case. On the other hand on the Gascoyne a few years later I saw mixed flocks as described by Austin, the individuals, males, females and young being either red or blue in approximately equal proportion in some of the herds.

A male and a female were preserved by Austin, being brought safely to Perth, in spite of the dangers and privations of the western journey, and later presented to the British Museum where they are still in the collection. The presence of the animal in Western Australia was so unexpected that as late as 1888, Oldfield Thomas in the British Museum Catalogue doubted the accuracy of the statement that Austin's skins had been obtained in this colony.

Near the Roderick River, a tributary of the Murchison, Austin "fired at, and missed two moderate sized black Kangaroos" whose identity is uncertain and in the same district, at Mt. Welcome, killed Rock Kangaroos⁵¹ of the species

⁵¹ *Petrogale lateralis* Gould.

previously met with and shot at Waddouring, and a few miles west of Mt. Farmer. Warrungs⁵² abounded in cypress thickets at Wandanning, east of Lake Moore, and in the Mt. Magnet district, Kangaroo-Rats⁵³ were noticed at Koomberkine and north of Dijoin (?Datjoin) and possums at Goomalling where they are common—hence the name from Kumarl, a possum—and Wandanning; whilst a large quantity of possum fur was found at a deserted natives' camp 15½ miles north of "Dijoin." Although Dalgites were not seen, their tracks and burrows were noticed near Recuit Flats in the Mt. Magnet district.

The letter from W. A. Sanford, printed on pages VIII and IX deals with the mammalian and avian fauna and is based upon skins submitted and adequate descriptions. The list includes:—

Osphranter rufus, Great Red Kangaroo

Lagorchestes hirsutus, Rufous Hare Wallaby

based upon specimens, as well as—

Chaeropus castanotis, Chestnut-eared Hog's-foot

Onychogalea luna'a, Lunated nail-tailed Kangaroo or Worung.

Although the *Chaeropus* was said to have been met with in large numbers, to have been so common as not to deserve mention in the body of the report, it has long disappeared from the greater part of Western Australia. It was not seen by Tunney, who traversed much of the State 50 years ago collecting for the Museum, and it is not represented in the Museum's collection.

Although out of place in this paper, I cannot refrain from mentioning that the rare False Vampire Bat, *Macroderma gigas* (Dobson) was seen by Austin in a cave on Mt. Kenneth. Three individuals "the size of a common pidgeon and brilliantly white" flew out of a crevice in the overhanging rocks and escaped.

John Gould's sumptuous work on the Mammals of Australia, commenced in 1845, was completed in 1863. It contains excellent lifelike representations though often on a heroic scale of the species dealt with. Notes on habits and distribution are given and, in connection with most Western Australian forms, the names by which the animals are known to the natives (Gilbert in his letters often referred to his efforts to obtain this information). As regards distribution it must be remembered that "interior of Swan River" referred to the country near York, the Avon River Valley, and so on, and not to the far interior as we know it today. Contemporary maps show how little was known at that time, and even a decade or two later, of the vast tract of country included within the boundaries of Western Australia.

In the late sixties, George Masters of Sydney made two collecting trips to South Western Australia, the first to King George's Sound during the months of January to April, 1866, and the second extending over the Spring and Summer of 1868–1869 (22nd September to 1st April). This was again to the King George's Sound area though we know from material in the British Museum that he went as far afield as Pallinup River (Salt River).

The lists of specimens obtained include many of interest and rarity.

⁵² *Onychogalea lunata* (Gould).

⁵³ *Bettongia lesueur gravis* (Gould).

Mammals collected by George Masters "in the vicinity of King George's Sound during the months of January, February, March, April, 1866."⁵⁴

	Skeletons.	Skulls.	Skins.	In Spirit.
<i>Macropus ocydromus</i>	1	....	....
<i>Halmaturus manicatus</i>	1	2 young
<i>Halmaturus derbianus</i>	1	6	6 young
<i>Halmaturus brachyurus</i>	1	18	5 young
<i>Lagorchestes fasciatus</i>	1	....
<i>Onychogale lunata</i>	6	....
<i>Bettongia campestris</i>	1	1	3	....
<i>Bettongia ogilbyi</i>	2	....
<i>Hypsiprymnus gilberti</i>	5	3 young
<i>Hypsiprymnus platyops</i>	1	....
<i>Peragalea lagotis</i>	1	....
<i>Perameles obesula</i>	4	2 adults 4 young
<i>Phalangista viverrina</i>	1	7	2 young
<i>Dasyurus geoffroyi</i>	1	....
<i>Tarsipes rostratus</i>	28 adults 2 young
<i>Antechinus fuliginosus</i>	54 adults
<i>Antechinus leucogastor</i>	4 adults

Mammals collected in Western Australia by George Masters from 22nd September, 1868, to 1st April, 1869.⁵⁵

Pencil note "King George's Sound and Salt River."

	Skeletons.	Skulls.	Skins.	In Spirit.
<i>Myrmecobius fasciatus</i> ....	....	....	1	1 adult
<i>Perameles myosurus</i> ....	....	7	2	20 adults and young
<i>Perameles obesula</i> ....	....	2	2	4 adults and young
<i>Phalangista vulpina</i> ....	....	1	2	1 young
<i>Phalangista viverrina</i>	1	1	3	4 young
<i>Phascogale penicillata</i> ....	....	1	....	1 adult
<i>Antechinus leucogastor</i> ....	....	2	....	10 adults and young
<i>Antechinus fuliginosus</i> ....	....	....	....	11 adults
<i>Antechinus apicalis</i> ....	....	....	....	1 adult
<i>Dasyurus geoffroyi</i> ....	....	1	2	....
<i>Macropus ocydromus</i>	1	9	5	1 young
<i>Halmaturus manicatus</i>	1	3	5	....
<i>Halmaturus derbianus</i> ....	....	1	8	1 young
<i>Halmaturus brachyurus</i>	6	6	8	8 young
<i>Onychogale lunata</i>	1	1	3	1 young
<i>Lagorchestes fasciatus</i>	1	....	5	....
<i>Bettongia ogilbyi</i>	1	6	3	2 young
<i>Bettongia graii</i> ....	....	1	2	....
<i>Hypsiprymnus gilberti</i>	1	....	....	1 young
<i>Hypsiprymnus platyops</i> ....	....	....	1	2 adults

⁵⁴ Copied from list of Masters' specimens (Australian Museum). List lent by Major Whittell.

⁵⁵ Copied from list of Masters' specimens (Australian Museum). List lent by Major Whittell.

The Catalogue of the Marsupialia and Monotremata in the collection of the British Museum (Natural History) by Oldfield Thomas of 1888, contains the description of the Western Ringtail *Pseudochirus occidentalis* now for the first time separated from the Eastern *Ps. peregrinus* with which it had previously been identified, although as we have seen its darker colouration had been noted. A number of the species erected by Gould and others are reduced to the synonymy, *M. ocydromus* Gould is considered to be identical with *M. giganteus* (Zimm.) but *M. melanops* Gould is given sub-specific rank. *M. manicatus* Gould is placed in the synonymy of *M. irma* Jourd, *H. binoe* Gould in that of *M. agilis* Gould and the Tammar, *M. eugenii* Desm. given the following long list *H. derbianus* Gray from Swan River, *H. emiliae* Gray (n.n.) from the Abrolhos. *H. houtmanni* Gould from East Wallabi Island, *H. dama* Gould Moore's River, and *H. gracilis* Gould from Walyema Swamp, N.E. of Northam. The *H. (T) brevicaudatus* of Gray is antedated by the *M. brachyurus* of Q. & G. *L. leichardti* Gould is considered a subspecies of *L. conspicillatus* Gould, but similar rank is not allowed to *L. albipilis* Gould which is entered in the synonymy of *Lagostrophus fasciatus* Per & Less., a decision which Thomas himself altered in later years. The western form *Bettongia ogilbyi* (Gould) Waterhouse was merged into the eastern *B. penicillata* Gray and *B. Graii* Gould into *B. lesueuri*. Among the Phalangeridae, the priority of *Tarsipes spenserae* Gray over *T. rostratus* Gerv. & Verr. is not yet recognised. *Dromicia neilli* Waterhouse is merged in *D. concinna* Gould, *Perameles fusciventer* Gray in *P. obesula* (Shaw), and *P. arenaria* Gould in the *P. bougainvillei* of Quoy and Gaimard. For the pig-footed bandicoot *Chaeropus* the name *ecaudatus* Ogilby is incorrectly disallowed because it was based upon a mutilated specimen and *castanotis* Gray substituted, and the name *occidentalis* suggested by Gould for the western representative disallowed. The type locality of this form "inland from York" is given as "Boorda Kirltana W.A." by Thomas. Gray's *leucogaster* for the western *Ph. flavipes* Waterhouse and *fuliginosus* Gould for the western *Sm. murina* Waterhouse reduced to the synonymy are restored by later workers.⁵⁶

Finally the *Sminthopsis* collected by W. W. Froggatt in the "Pindan" scrub bordering King Sound near Derby and described as *Antechinus (Podabrus) froggatti* by E. R. Ramsay⁵⁷ was merged into the widespread species *Sminthopsis crassicaudata* Gould from which it was reinstated as *Sminthopsis froggatti* by Troughton in 1932⁵⁸.

Ramsay's *Perameles auratus*⁵⁹ was, however, allowed to stand as a good species.

We now turn to activities in Australia and the work of collectors in this State.

In May, 1894, K. Dahl of Christiania landed in South Australia to commence a collecting expedition to the Northern Territory and West Kimberley, which was to extend over the next 21 months. Much of this time was spent in the Territory but on October 10th, 1895, the party landed at Roebuck Bay to spend four exciting months in Dampier Land.

They displayed the greatest energy and were well assisted by Mr. Male, the local agent of Messrs. Streeter, owners of Hill Station. The collections made "represented the higher mammals of North-Western Australia in a

⁵⁶ e.g., Iredale and Troughton, 1934.

⁵⁷ *Proc. Linn. Soc., N.S.W.* (2), 1887, (1888), p. 552.

⁵⁸ *Rec. Aust. Mus.*, Vol. XVIII., No. 6, 1932, p. 352.

⁵⁹ *Op. cit.*, p. 551—Now *Isoodon t. uratus* (Ramsay).

quite exhaustive manner." Dahl knew that they contained some hitherto unknown animal forms, and he felt convinced that these exhaustive collections from a region little known or examined, would prove well worth the toil spent in their accumulation.

In the Roebuck Bay district, the following marsupials were obtained⁶⁰ :—

The Jungle Kangaroo	....	....	....	<i>Macropus agilis.</i>
The Yalva or Kangaroo Rat	....	....	....	<i>Bettongia lesueur.</i>
The Northern Nail Tailed Wallaby	....	....	....	<i>Onychogalea unguifera.</i>

The Northern Possum, *Trichosurus vulpecula arnhemensis* Collet, was made known to Science for the first time and the little Flying Squirrel, *Petaurus breviceps*, was added to the Western Australian list, being rather rare.

A species of Bandicoot presumed to be *Isoodon obesulus* but really *Isoodon auratus* Ramsay, the Golden Bandicoot, was obtained and a single Phascogale, the Warmbenger, *Phascogale tapoatafa pirata* Thomas, was seen.

About this time the late John T. Tunney began his long association with the Western Australian Museum as a collector, in the course of which he travelled thousands of miles in this State, and in the Northern Territory besides visiting a number of islands off our coasts. Although birds were his principal objective, he included numerous specimens of mammals in the Collections he made. He visited most of the localities made famous by John Gilbert and Dahl, but also broke much new ground. The Plans of his various tours were prepared by the late Bernard H. Woodward, F.G.S., C.M.Z.S., first Curator and then Director of the Western Australian Museum and Art Gallery, whose name is associated with two of Tunney's larger Kangaroos in the North. *Macropus robustus woodwardi* Thomas, from the Kimberley district and *Macropus bernardus* Thomas, from the South Alligator area of the Northern Territory.

Tunney rediscovered the *Osphranter isabellinus* of Gould first collected by Captain Stokes of the Beagle on Barrow Island in 1840. He also collected specimens of a number of animals which proved to be new to Science and were described by Oldfield Thomas, F.R.S., in various scientific publications. The list included *Macropus robustus cervinus* Thomas from Pindar on the Murchison, *Macropus robustus woodwardi* Thomas from the Grant Range, West Kimberley; *Petrogale rothschildi* Thomas from the Cossack River; *Petrogale hacketti* Thomas from Mondrain Island in the Recherche Archipelago; *Isoodon barrowensis* Thomas from Barrow Island. To these Dr. Ernst Schwarz, added *Macropus robustus rubens* and *Macropus rufus pallidus* in 1910⁶¹.

Subsequent additions to the fauna are few, but much has been learnt concerning the distribution of species and forms. In December, 1901, Mr. A. C. Blyth—Not Bligh as stated by Waite—presented to the Museum two small marsupials which he had caught "in the Pilbarra District." Other specimens were taken to Sydney where Mr. Bligh placed them in the care of Mr. Waite for observation. These three animals subsequently escaped and were never seen again. Later the two specimens left in Perth were forwarded to Sydney for examination where they were found to be new to science, and received the name of *Phascogale blythi*⁶² Waite.

⁶⁰ R. Collet, *Proc. Zool. Soc., Lond.*, 1897, p. 317.

⁶¹ *Novitates Zool.*, XVII., 1910, pp. 51 and 53.

⁶² As this is a *lapsus calami* the name should be altered in accordance with International Rules Article 19, to *Ph. blighi-Dasyercus blighi*. See G. C. Shortridge *Proc. Zool. Soc. Lond.*, 1909 (1910), p. 804.

In 1906 the Zoological Gardens in Frankfurt A.M., received specimens of *Macropus rufus* (Desm.) from the Murchison district which were examined by Dr. P. Cahn and considered to represent a distinct form to which the name *Macropus rufus occidentalis* was given⁶³, although it is now rightly considered to be identical with Rothschild's *Macropus rufus dissimulatus*⁶⁴ and is accordingly placed in the synonymy of this form by Iredale and Troughton.

In 1904 and 1905, Mr. G. C. Shortridge collected in Southern W.A. for the British Museum (Natural History), the expenses being defrayed by Mr. W.E. Balston. The districts visited were among those made famous by the work of John Gilbert—Beverley, York, Northam, Toodyay and Wongan Hills—as well as new ground on the King River near Albany, Wagin, Southern Cross, Kalgoorlie and Laverton. Extensive series of most animals were obtained, although a number of forms generally considered common or characteristic, were found to be either rare or absent. Later another collection was made in regions where the fauna still persisted in its original state. Stockpool, east of Beverley, Dwaladine, east of Brookton, and Woyaline east of Pingelly and Dale River to the west of the Avon Valley, were visited with marked success. A further trip was made to Bernier Island in Shark Bay, where the bag consisted of the Wallabies *Bettongia lesueur lesueur* (Q. and G.), *Lagostrophus fasciatus fasciatus* (P. and L.), and *Lagorchestes hirsutus bernieri*⁶⁵ Thomas, the last a new form. An imperfect skull of the Bandicoot *Perameles bougainville* was the only evidence obtained of the presence of these marsupials. When examining this material, Thomas compared it with some obtained in that area by J. T. Tunney in 1899, and as a result the *Lagorchestes* from Dorre Island was considered to be distinct from its neighbours and given the name of *Lagorchestes hirsutus dorreeae*⁶⁶. A critical examination of the material obtained further south revealed that the *Lagostrophus* from the S.W., was distinct from that living in the Shark Bay area and so Gould's *albipilis* was revived as a sub-species. Good series were obtained representing species now either rare or extinct. Only one new form was described, the western *Dasyurus geoffroi* being separated from its eastern relative because it was "larger, the difference specially marked in male skulls," hence the name *fortis*⁶⁷.

An interesting addition to our marsupial fauna was recorded in No. 4 of the Journal of the W.A. Natural History Society by C. P. Conigrave's paper on the Marsupial Mole, *Notoryctes typhlops* Stirling. A specimen of this rare animal of the Eremaea obtained near Mt. Romilly where Col. Warburton's track crosses the Canning Stock Route was presented to the Museum by Mr. H. S. Trotman, second in command of the survey party.

Several further specimens have since reached the Museum, mostly from Wallal, one of these when sent to Oldfield Thomas, was made the type of a new species—*N. caurinus*⁶⁹ Thomas.

Another inhabitant of the arid North West, was described by Baldwin Spencer, 1908 as *Sminthopsis longicaudatus*⁶⁸, the habitat is given as West Australia only, but as we know that the collector, G. A. Keartland, was in the

⁶³ *Zool. Beob.*, XLVII., 1906, p. 361.

⁶⁴ *Novitates Zoologicae*, Vol. XII., 1905, p. 508.

⁶⁵ *Proc. : Zool. Soc. Lond.*, 1906 (1907), part 2, pp. 468 and 763, see p. 775.

⁶⁶ *Proc. : Zool. Soc. Lond.*, 1906 (1907), part 2, pp. 468 and 763, see p. 775.

An account of the geographical distribution of the species (with maps) appears in *Proc. Zool. Soc. Lond.*, 1909 (1910), p. 803.

⁶⁷ *Dasyurinus geoffroi fortis* (Thomas) *op. cit.*, p. 476.

⁶⁸ *Proc. Roy. Soc., Vic.*, (n.s.), 1908, p. 449.

In a contribution "The External Characters of *Thylacinus*, *Sarcophilus* and some Related Marsupials,"⁷⁶ R. I. Pocock subdivides the old genus *Dasyurus*, into four genera basing his opinion upon the structure of the feet, and in one case on the dentition as well. The type of the restricted *Dasyurus* *viverrinus* Shaw, *Notoctonus*⁷⁷ has *geoffroii* Gould as its type and *Satanellus* is given *hallucatus* Gould.

About the same time there was published in London "The Wild Animals of Australia," by A. S. le Souef and H. Burrell with a chapter on the Bats by E. le G. Troughton. The authors describe all the forms recognised, often with notes on the habits, the nomenclature being that generally accepted at the time. It is still the most useful book available though in parts it is necessarily out of date.

In "Notes on Four Little-known Species of Kangaroo,"⁷⁸ A. S. Le Souef gives reasons for supporting the opinion expressed in a previous paper⁷⁹ why *M. melanops* Gould must be considered to be distinct from *M. giganteus* (Zimm.). *Macropus hagenbecki* Rothschild is also referred to, the statement being made that "the sexes are alike in coloration." On the other hand when Schwartz prepared his monograph in 1910 only an immature individual with the milk premolar still in position was available for study, the other older individual having been lost.⁸⁰

The Government party under Surveyor Canning, engaged during 1930-31 in reconditioning the wells on the Canning Stock Route between Wiluna and Hall's Creek, was accompanied by the Museum Taxidermist, the late O. H. Lipfert, who made a fine general collection from practically unknown country. A number of marsupials were obtained including some interesting forms. *Dasyurus geoffroii* (Gould) was found at Well 46, far north of its previously recorded range and of very special interest because the Pilbara District has a Dasyure closely related to, if not actually identical with, the *Satanellus hallucatus* (Gould) of the Kimberleys and Northern Territory. An *Antechinomys*, perhaps *A. lanigier* Gould, was caught near Sturt Creek, the first Western Australian specimen of the genus, and several *Sminthopsis* reminiscent of the *S. hirtipes* Thomas of Central Australia. The Northern Bandicoot, *Isoodon auratus* (Ramsay) was found as far south as Well 36, and the Northern Possum, *Trichosurus vulpecula arnhemensis* Thomas at Sturt Creek. The fauna of the Eremaea was represented by *Notoryctes caurinus* Thomas, *Lagorchestes hirsutus* Gould, and many *Dasyercus cristicauda* (Krefft)⁸¹. *Macrotis lagotis* (Reid) was also present.

In 1931, Surveyor H. L. Paine and the Government Geologist F. G. Forman undertook a venturesome journey eastwards to the South Australian border and, while in the country south of the 26th parallel and slightly east and west of the 126th meridian, made a small collection of Marsupials including single specimens of *Lagorchestes hirsutus* Gould, *Macrotis lagotis* Reid, *Isoodon auratus* (Ramsay), *Dasyercus cristicauda* (Krefft), *Sminthopsis hirtipes* Thomas, which a little earlier had been added to the W.A. list by Lipfert and a most interesting little Bandicoot, unfortunately immature, of the genus *Perameles*.

⁷⁶ *Proc. Zool. Soc. Lond.*, 1926, p. 1037.

⁷⁷ Antedated by *Dasyurus* Matschie, 1916, *vide* Iredale and Troughton, 1934.

⁷⁸ *Proc. Linn. Soc., N.S.W.*, 53, part 4, 1928, p. 397, text figs. A-D.

⁷⁹ *Aust. Zool.*, Vol. 3, No. 4, 1923, p. 145.

⁸⁰ This "species" is referred to here as some years ago the late A. Goerling of Marloo Station in the Murchison, told me that he had collected the animal "north of the Murchison" for Karl Hagenbeck of Hamburg, who sold it to Lord Rothschild.

⁸¹ The long series collected include *D. c. cristicauda* and *D. c. hillieri* Thomas, suggesting that the latter is merely a colour variation and not a sub-species or race, neither is it sexual nor seasonal.

Pilbara and the desert to the east and as the Museum possesses a specimen, M2394, of the same species from Pillendinnie (Marble Bar) we may assume the specimen came from that part of the State.

In 1908 and 1909 two small collections of Marsupials from the far north were purchased from a collector, J. P. Rogers. The first contained a Northern Spotted Native Cat, *Satanellus hallucatus*, which Oldfield Thomas found showed differences from the typical form prevalent in the Northern Territory and was therefore given the name *Dasyurus hallucatus exilis* Thomas⁷⁰. In the second consignment, were skins of a Northern Hill Kangaroo from East Kimberley, which, because of certain characters, was differed from *Macropus robustus woodwardi* Thomas, from West Kimberly, was named *M. r. bracteator* Thomas⁷¹, this sub-species is not recognised by Iredale and Troughton. At the Negri River, just inside the Western Australian border, Rogers also obtained a typical example of *Macropus antilopinus* Gould, originally collected at Port Essington by John Gilbert a century ago. A paper by Dr. S. Schwarz, which appeared in the Annals and Magazine of Natural History for February, 1910, contained the description of a new form of the Jungle Kangaroo, *Macropus agilis aurescens* Schwarz, from the Fitzroy River and the Grant Range in West Kimberley. In the Novitates Zoological Vol. XVII., published in the next month, this author contributed an important paper on the large Kangaroos and their geographical forms. This contains the original descriptions of *Macropus rufus pallidus* (type locality Shaw River), *Macropus robustus rubens* (type locality Box Soak) and the inference that Rothschild's *Macropus hagenbecki* of 1907⁷² is a hybrid *Macropus rufus* X *M. robustus*, although this is not stated.

Dr. Mjoberg's Swedish Scientific Expedition arrived in Western Australia in 1910 and spent several months in the State chiefly in West Kimberley, but also in the South West between Perth and Albany. The marsupials obtained were:—

A young unidentified <i>Lagorchestes</i> and		
The Organ Grinder Wallaby	....	<i>Onychogalea unguifera</i> (Gould)
Woodward's Kangaroo	....	<i>Macropus robustus woodwardi</i> Thomas
The Jungle Kangaroo	....	<i>Macropus agilis aurescens</i> Schwarz
The Dark Jungle Kangaroo	....	<i>Macropus agilis nigrescens</i> . Lonnb. n.s.sp. Type Loc. Broome.
<i>Phascogale subtilissima</i> , Lonnb. ⁷³	....	Type Loc. Near Noonkambah Station.

An outstanding addition to our Marsupial fauna to be published in our Journal was made by W. B. Alexander in a paper read on April 9th, 1918⁷⁴, describing a new species of marsupial of the sub-family Phalangerinae to which the name *Wyulda squamicaudata* was given. This animal is closely related both to *Trichosurus* and *Phalanger*. It appears to be more or less terrestrial in its habits in this manner recalling the *Petropseudes dahli* (Collet), of the Northern Territory.⁷⁵

⁶⁹ *Notoryctes caurinus* Thomas *Ann. Mag. Nat. Hist.*, July, 1920, p. 111.

⁷⁰ *Satanellus hallucatus exilis* (Thomas), *Ann. Mag. Nat. Hist.* (8) III., 1909, p. 152.

⁷¹ *Ann. Mag. Nat. Hist.* (8) VII., 1911, p. 609.

⁷² *Novitates Zoological* 14, p. 333.

⁷³ *Kunigl. Se. Vet. Akad. Haudl.* III., No. 1, p. 9, now *Planigale subtilissima*.

⁷⁴ *Journ. Roy. Soc. W.A.*, Vol. IV., 1917-8 (1919), p. 31, pl. 1.

⁷⁵ *Zool. Anzeiger* XVIII., No. 490, 1895, p. 464.

This resembles a young *Perameles bougainville* Q. & G. from Dorre Island in the Museum series, but seems to have longer and softer fur, a brighter colouration, and longer ears. In many ways it is reminiscent of Spencer's *P. eremiana* with which it was thought to agree until it was found that the proportions of the digits of the fore-feet agree with *P. bougainville* Q. & G., *P. myosura* Wagner, and *P.m. notina* Thomas, specimens of which are in the Museum's study collection.

When studying the material in the Australian Museum, E. le G. Troughton examined some Western Australian material, publishing his results in the Records of his Museum.⁸² He reached the conclusion that *Sminthopsis foggatti* of Ramsay was a good species. Further, among specimens labelled *Sm. crassicaudata* he found a female preserved in spirits which showed so many points of difference that it was made the type of a new species *Sminthopsis granulipes* Troughton, with the type locality King George's Sound. "Col. G. Masters, 1869."

When material in our Museum was checked several skins were found which agreed with the description of this new species and extended the range northwards to Kulin, Marvel Loch and Nungarin. Reference to this extension was made in my paper of the same year.⁸³

Another piece of research by Troughton was the "Revision of the Rabbit-Bandicoots."⁸⁴ In this paper the distribution, past and present together with the variation in size and pelage were discussed and conclusions drawn. *Macrotis lagotis lagotis* Reid is the form distributed over the greater part of the animal's range in W.A. though a new sub-species is described from Rawlinna on the Trans-Australian Railway, under the name of *M. lagotis interjecta* Troughton.

In 1934, the Trustees of the Australian Museum published Memoir VI., "A Check-list of the Mammals of Australia," by Tom Iredale and E. le G. Troughton in which the Mammalian fauna of the Continent is classified according to present practice. A number of familiar names are superseded by others which have been shown to have priority. The range of the species and sub-species is indicated and ample references are provided.

The following additions should be made. *Dasyercus cristicauda* (Krefft) occurs in the Eremaea at the Warburton Ranges, the Canning Stock Route and further west. *Sminthopsis hirtipes* Thomas also is known from the Canning Stock Route and *Antechinomys* from the Pilbara and the vicinity of Lake Grace in the south. *Lagorchestes conspicillatus leichardti* Gould has a wide range in the Kimberleys and *Satanellus hallucatus* ssp? is the common Dasyure of the Pilbara.

Subsequent work has been mainly concerned with nomenclature and distribution. Also the overseas centre of interest seems to have passed from London to New York after the death of Oldfield Thomas, for the articles on marsupials in the latest edition of the Encyclopedia Britannica are by American mammalogists and a number of articles have been published in the "American Museum Novitates" and the "Bulletins of the American Museum of Natural History."

In his Wallace's Line and the Distribution of Indo-Australian Mammals⁸⁵, Dr. H. C. Raven adopts a conservative attitude; he does not recognise the suggested subdivisions of *Dasyurus*, *Phascogale*, *Pseudochirus*, *Phascolomys*,

⁸² *Rec. Aust. Mus.*, XVII., No. 6., p. 349, 1932.

⁸³ *Jour. Roy. Soc. W. Aust.*, XIX., 1932-3, p. 21.

⁸⁴ *Aust. Zool.*, VII., p. 219, September, 1932.

⁸⁵ *Bull. Am. Mus. Nat. Hist.*, Vol. 68, article 4, 1935, p. 179.

or the larger form of *Macropus* and for *Wallabia* he uses the older *Protemnodon* of Owen⁸⁶ basing his opinion upon the dental characters of the genus, to which he adds *eugenii* and its sub-species, removing them from *Thylogale*.⁸⁷ When dealing with the material collected by the Archbold Expedition to New Guinea, Dr. G. H. H. Tate critically examined the marsupials obtained.⁸⁸ He did not recognise some of the genera of Iredale and Troughton reducing them to subgeneric rank and replacing the *Wallabia* of Trouessart by the older *Protemnodon* of Owen, following H. C. Raven in this respect.

“The Furred Animals of Australia,” by E. le G. Troughton appeared in 1941. It presents an up-to-date account of our living mammals giving a wealth of information concerning distribution, relationship and habits. Space does not permit each species to be described in detail, the author depending upon the 25 coloured plates which, unfortunately, are not all that might be desired. But taken together with Le Souef and Burrell, it helps to form a complete monograph of the present day mammalian fauna of Australia and is therefore invaluable to all workers. A few errors present in the first edition are corrected in the second which appeared in 1943.

A valuable contribution to our knowledge “Adaptive Branching of the Kangaroo Family in Relation to Habitat,” by H. C. Raven and W. K. Gregory appeared in 1946⁸⁹ and a careful study of the Dasyuridae by G. H. H. Tate followed last year.⁹⁰

And what of the future ?

The fauna of the South-West is fairly well known and is unlikely to produce many forms new to Science. The vast interior, our section of the Eremaea is not more promising but the Kimberley area, though closely linked to the Northern Territory, presents many opportunities for the evolution of new forms whilst the North Western quarter, where the Eremaean species are pressing on to the coast and the South Western and Kimberley species seem to be making their last stand, may, as a result of the struggle, produce species and perhaps also genera not yet scientifically described.

But the need for investigation is urgent, collecting expeditions should be organised without delay as even the hardy supporters of the Australian coat-of-arms are threatened by the clamours of the pastoralist and the wheat farmer.

As regards the future of the fauna as a whole, let me quote from Francis Harper’s “Extinct and Vanishing Mammals of the Old World.”

“Conditions in Australia are peculiar and exceptional, owing to the fact that its unique native mammalian fauna is predominantly marsupial, and so lowly organised as to be quite unfitted for coping with certain exotic and aggressive species introduced by civilised man. The chief of these are the European Red Fox, the Domestic Cat, the European Rabbit, the House Rats and the House Mouse. Further competition results from encroachment of hosts of sheep and cattle upon the ancestral

⁸⁶ *Proc. Roy. Soc., Lond.*, 21, No. 141, 1873, p. 128.

⁸⁷ See also Raven, H. C., and Gregory, W. K., “Adaptive Branching of the Kangaroo Family in Relation to Habitat.” *Am. Mus. Nov.*, No. 1309, March, 1946.

⁸⁸ *Bull. Am. Mus. Nat. Hist.*, Vol. 73, article 4, 1937, p. 331.

⁸⁹ *Am. Mus. Nov.*, No. 1309.

⁹⁰ “On the Anatomy and Classification of the Dasyuridae.” *Bull. Am. Mus. Nat. Hist.*, Vol. 88, article 3, 1947, p. 99.

grazing grounds of the herbivorous marsupials. An apparently minor predatory role is played by the Dingo (*Canis dingo*), which was presumably introduced by aboriginal man

“The serious depletion of the native fauna by these agencies is supplemented by widespread bush fires, by conversion of a vast acreage of wild land into crop or grazing lands, by the huge fur trade, by epizootic disease, and by the large-scale use of poisoned bait, which takes toll of many animals besides the pests against which it is directed.

“Is there no hope ?

“I think something may be done to improve the position. True, some species have already disappeared whilst others are on the decline through natural causes. But if we act at once, if we undertake active propaganda and make the public fauna-conscious ; if we make the reserves already in existence real sanctuaries for wild life by fencing out the rabbit and the fox and by forbidding access to domestic flocks and herds and, if the Fisheries and Game Department is enlarged so that the inspectors and game wardens can adequately perform their functions, then I feel sure that our very efficient and enthusiastic Chief Guardian of Game can be relied upon to do his utmost to preserve and foster our unique and remarkable fauna—a national heritage that we hold in trust for generations to come. It is not ours to deal with as we wish.”

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